

# A Review of some Grass-infesting Thrips from India with a Description of a New Species

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Plants of the families Gramineae and Cyperaceae have been known to harbour a wealth of Thrips fauna. But for records from random collections, no precise information is available in this country of the thrips infesting Gramineae, though an early attempt towards such a study was made by Ananthakrishnan (1956)<sup>1</sup> on *Andropogon pertusus*. Several species of Gramineae were subsequently examined, including *Apluda aristata*, *Chloris barbata*, *Cynodon dactylon*, *Cymbopogon citratus*, *Eragrostis* sp., *Oryza sativa*, *Panicum maximum*, *Sorghum vulgare*.

While it is natural to classify the graminivorous thrips as leaf sheath, leaf blade, and inflorescence inhabitants, the degree of infestation is of importance, particularly when it is observed that many grasses harbour several species of thrips, some primary inhabitants, others secondary, yet others casual or rare, with the possibility of being accidentally carried by wind or other factors. For instance, in *Andropogon pertusus*, Ananthakrishnan (1956) has recorded a large percentage of *Podothrips oryzae* Priesner and *Neolimothrips saccharivora* Shumsher, moderate numbers of *Anaphothrips flavicinctus* Karny, *Phibalothrips peringueyi* Faure, and *Caliothrips indicus* (Bagnall), and negligible numbers of other species. The same is the case with *Panicum maximum*, where *Exothrips madrasensis* Ananthakrishnan and *Anaphothrips flavicinctus* occur in very large numbers, while *Chirothrips maximi* Ananthakrishnan and *Caliothrips indicus* occur in moderate numbers. The table below shows that *Anaphothrips flavicinctus*, *Neolimothrips saccharivora*, and *Caliothrips indicus* occur on several species of grasses and are hence polyphagous. All the same, *Anaphothrips flavicinctus* shows special preference for the guinea grass (*Panicum maximum*) and is abundant throughout the year. The same is true of *Neolimothrips saccharivora* which, though occurring on sugar cane leaves and *Chloris barbata* in good numbers, has a special preference for *Andropogon pertusus*. An interesting feature of this host preference is that, besides *Anaphothrips flavicinctus*, *Exothrips madrasensis* takes to *Panicum maximum* as the preferred

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<sup>1</sup> *Zool. Anz.* 156 (1-2) : 29-33.

host, and this species is very rarely met with in other species of grasses *Caliothrips indicus*, like *Anaphothrips flavicinctus*, is a highly polyphagous species, known to feed on several plants other than grasses. Instances of monophagous species are seen in *Haplothrips (Trybomiella) apicalis* Priesner which heavily infests *Cynodon dactylon* almost throughout the year, its distribution to the other host plants being restricted by its being primarily an apterous form, though macropterous and brachypterous forms are met with Ananthakrishnan (1957). Similarly, *Ramakrishnothrips jonnaphila* (Ramk.) inhabits the sheaths of *Sorghum vulgare*, while *Praepodothrips cymbopogonii* Ananthak. infests leaf blades of *Cymbopogon citratus*, and these species maintain this monophagous habit irrespective of the environment, whether it be in the plains or at heights of 5000-7000 feet as observed by the author in the Nilgiri and Kodaikanal hills.

The following table gives the host-species index together with the degree of infestation :

Host	Thrips	Degree of incidence <sup>1</sup>			Distribution
		Frequent (over 25)	Meagre (below 10)	Accidental, or rare	
<i>Andropogon pertusus</i>	<i>Anaphothrips flavicinctus</i> Karny	X			Oriental India
	<i>Neolimothrips saccharivora</i> Shumsher	X			
	<i>Caliothrips indicus</i> (Bagnall)	X			India
	<i>Sericothrips graminis</i> Ananthakrishnan		X		India
	<i>Phibalothrips peringueyi</i> Faure	X			India & Africa India, Siam, & Java
	<i>Podothrips oryzae</i> Priesner	X			
	<i>Hoplandrothrips indicus</i> Ananthakrishnan			X	India
	<i>Haplothrips apicalis</i> Priesner			X	India
<i>Haplothrips gowdeyii</i> (Franklin)			X	Cosmopolitan	
<i>Apluda aristata</i>	<i>Anaphothrips sakimurai</i> Ananthakrishnan	X			India
	<i>Aptinothrips rufus</i> Gmelin		X		Cosmopolitan
	<i>Caliothrips graminicola</i> (Bagnall & Cameron)	X			India & S. Africa
	<i>Caliothrips indicus</i> (Bagnall)	X			India
	<i>Chirothrips ramakrishnai</i> Ananthakrishnan			X	India
	<i>Chirothrips manicatus</i> Haliday			X	Cosmopolitan

<sup>1</sup> The numbers mentioned represent those collected in an area of 50 sq. yards,

Host	Thrips	Degree of incidence			Distribution
		Frequent (over 25)	Meagre (below 10)	Accidental, or rare	
<i>Chloris barbata</i>	<i>Neolimothrips saccharivora</i> Shumsher	X			India
	<i>Chirothrips loyolae</i> Anantha-krishnan	X			India
	<i>Chirothrips manicatus</i> Haliday			X	Cosmopolitan
	<i>Chiraplothrips priesneri</i> sp. nov. <i>Phibalothrips peringueyi</i> Faure		X X		India India & S. Africa
<i>Cynodon dactylon</i>	<i>Haplothrips (Trybomiella) apicalis</i> Priesner	X			India
<i>Cymbopogon citratus</i>	<i>Praepodothrips cymbopogonii</i> Ananthak.	X			India
<i>Eragrostis</i> sp.	<i>Caprithrips analis</i> Faure		X		India & S. Africa
	<i>Aptinothrips rufus</i> Gmelin		X		Cosmopolitan
<i>Oryza sativa</i>	<i>Thrips (Oxyrrhinotrips) oryzae</i> Williams	X			India
<i>Panicum maximum</i>	<i>Anaphothrips flavinctus</i> Karny	X			India
	<i>Chirothrips maximi</i> Anantha-krishnan	X			India
	<i>Exothrips madrasensis</i> Ananthak. <i>Caliothrips indicus</i> (Bagnall)	X	X		India India
<i>Sorghum vulgare</i>	<i>Ramakrishnothrips jonnaphila</i> (Ramk.)	X			India

## KEY TO GENERA OF GRASS-INFESTING THIRPS

## Suborder TEREBRANTIA

## Family THIRIPIDAE Uzel

Upper surface of body deeply reticulate, with polygonal areas ;  
terminal antennal joints long and thin

## Subfamily HELIOTHIRIPINAE

Upper surface not polygonally reticulate, but at most with transverse striae. Antennae 7 or 8-jointed, rarely 6- or 9-jointed ; terminal joints not long and thin

## Subfamily THIRIPINAE

## Subfamily HELIOTHIRIPINAE

Antenna 8-jointed, style 2-jointed ; joints 3 and 4 with forked sense cones ; forewings with dark and pale transverse bands

*Caliothrips* Daniel

[*C. indicus* (Bagnall) and *graminicola* (Bagnall & Cameron)]

Antenna 7-jointed, style 1-jointed ; wings not banded

*Phibalothrips* Faure

(*P. peringueyi* Faure)

## Subfamily THIRIPINAE

1. Head distinctly produced in front of eyes into a projection on which is inserted the antenna .. .. . 2  
 Head little or not produced .. .. . 3

2. Antennal joints 3 and 4 with forked sense cones ; mouth cone broadly rounded ; maxillary palpi 3-jointed

*Ramakrishnothrips* Shumsher

[*R. jonnaphila* (Ramk.)]

Antennal joints 3 and 4 with simple sense cones ; mouth cone long and narrow ; maxillary palp 2-jointed

*Neolimothrips* Shumsher

(*N. saccharivora* Shumsher)

3. Pronotum without any strong bristles .. .. . 4  
 Pronotum with at least one conspicuous bristle at hind angles .. 6  
 Pronotum with two well-developed bristles at hind angles .. 7  
 4. Wings and ocelli absent in both sexes .. .. . 5

5. Antennae 6-jointed ; body long and slender ; dorsal bristles on IX fine ; teeth on abdominal sternites absent

*Aptinothrips* Gmelin

(*A. rufus* Gmelin)

Antennae 8-jointed ; dorsal bristles on IX stout. Abdominal sternites with 10-15 teeth

*Caprithrips* Faure

(*C. analis* Faure)

6. Antennae 8-jointed, without a cross suture across joint 6 ; wings and ocelli always present in the females ; absent in the males. Foretibia of male unarmed

*Anaphothrips* (Subgenus : *Neophysopus*)



Foretibia of male armed with a distinct tooth at apex within.  
Antennal joint 1 of male stout, joints 4 and 5 curved within ;  
females normal (*Anaphothrips*-like)

*Exothrips* Priesner  
(*E. madrasensis* Ananthak.)

- |     |   |    |
|-----|---|----|
| 7.  | Antennae 8-jointed, style 2-jointed .. .. .   | 8  |
|     | Antennae 7-jointed, style 1-jointed .. .. .   | 15 |
| 8.  | Pronotum with prominent anteroangular bristles ..   | 9  |
|     | Pronotum without prominent anteroangular bristles ..  | 12 |
| 9.  | Maxillary palp 2-jointed .. .. .  | 10 |
|     | Maxillary palp 3-jointed .. .. .  | 11 |
| 10. | Antennae slender, style thin ; wings banded, narrow, with stout bristles ; anteroangulars shorter than antero-marginals |    |

*Ayyaria* Karny  
(*A. chaetophora* Karny)

- |     |  |  |
|-----|--|--|
| 11. | Anteroangulars longer than anteromarginals ; both wing veins with regularly set bristles throughout their length ; antennal style normal |  |
|-----|--|--|

*Frankliniella*  
(*F. sulphurea* Schmutz)

Pronotum with additional long bristle at lateral margin.  
Anteroangulars and posteroangulars and wing bristles very long

*Scolothrips* Hinds.  
(*S. indicus* Priesner)

- |     |  |    |
|-----|--|----|
| 12. | Forewings with both longitudinal veins distinct .. .. .  | 13 |
|     | Forewings with only the upper vein distinct, the lower vein being represented by a few scattered setae .. .. . | 14 |
| 13. | Lower vein with only four scattered setae ; outer postangulars longer than inner .. .. .                       |    |

*Euphysothrips* Bagnall  
(*E. minozii* Bagnall)

Lower vein with regular series of setae ; postangular prothoracic setae subequal .. .. .

*Taeniothrips* A. & S.

14. Abdominal segment IX with numerous prominent bristles at posterior margin. Abdominal segments with dense microsetulae .. .. .  
*Sericothrips* Karny  
 (*S. graminis* Ananthak.)
15. Pronotum and wings without particularly long bristles.  
 Wings without cross bars or dark areas .. .. 16
16. Mouth cone long and narrow surpassing base of prosternum  
*Thrips*, Subgenus :  
*Oxyrrhinothrips* Pr.  
 (*O. oryzae* Williams)
- Mouth cone shorter, not surpassing prosternum  
*Thrips* s. str.

## Suborder TUBULIFERA

1. Wings not narrowed nor constricted at middle .. .. 2  
 Wings narrowed or constricted at middle .. .. 3
2. Cheeks with bristle-bearing warts ; forefemora of male, with one or two teeth at apex ; that of female unarmed  
*Hoplandrothrips* Priesner  
 (*H. indicus* Ananthak.)
3. Forefemora and tibiae unarmed .. .. 4  
 Forefemora unarmed, foretibiae armed with teeth ; foretarsus with a well-developed tooth  
*Podothrips* Priesner  
 (*P. oryzae* Priesner)
4. Antennal joint 2 produced exteriorly, chirothripoid  
*Chiridothrips* R. & M.  
 (*C. indicus* R. & M.)
- Antennal joint 2 not chirothripoid ; cheeks parallel. Head about as long as wide ; mouth cone broadly rounded, never short. Foretibia normal  
*Haplothrips* Serville
- Cheeks strongly convex ; mouth cone very short, broadly rounded. Foretibia pointed interiorly at apex  
*Praepodothrips*  
 Priesner & Seshadri

Several other species have also been recorded in many random collections on grasses, but these are of little or no value to be reckoned among

grass-infesting thrips. Some of these forms include *Erythrothrips asiaticus* R. & M., *Frankliniella sulphurea* Schmutz, *Ayyaria chaetophora* Karny, *Euphysothrips minozzii* Bagnall, *Scolothrips indicus* Priesner, and *Chiridothrips indicus* R. & M.

#### **Caprithrips analis** Faure

1933 : *Caprithrips analis* Faure, J. C., *Bull. Brook. Ent. Soc.* **28** (1 & 2): 12-14.

This genus is being recorded for the first time in the Oriental region. The only record of this interesting genus, which is monotypic, is by Faure (1933) from two apterous females, from the base of tufts of a grass from Pretoria (S. Africa). This genus is characterised by the 8-jointed antenna, joint 6 not divided; cheeks narrower, straight; eyes bulging; sides of pronotum straight; dorsal bristles of segment IX stout; abdomen broadly conical at apex; abdominal sternites with 10-15 teeth. Apterous.

*Habitat* : Ten females on *Eragrostis* sp., Madras, March 1959.

#### **Caliothrips graminicola** (Bagnall & Cameron)

1932, *Hercothrips graminicola* (Bagnall & Cameron), *Ann. Mag. Nat. Hist.* (10) : 412-419.

1957, *Caliothrips graminicola* Faure, J. C., *J. Ent. Soc. S. Africa* **20** (1) : 79-88.

This species is a new record to the Indian region, the only other species known hitherto being *C. indicus* (Bagnall). *C. graminicola* has pale forewings, with four, short, dark patches, one each at base, at apex and two in between. The forewings are narrow and the ring vein is strong and prominent. Blackish brown wing vein setae are absent. Costa of forewing has 5-8 setae at base and two at apex; the lower vein has 4-7 setae, though a good many have only 4 or 5 setae.

*Habitat* : Several males and females on the grass, *Apluda aristata*, Madras, March 1961.

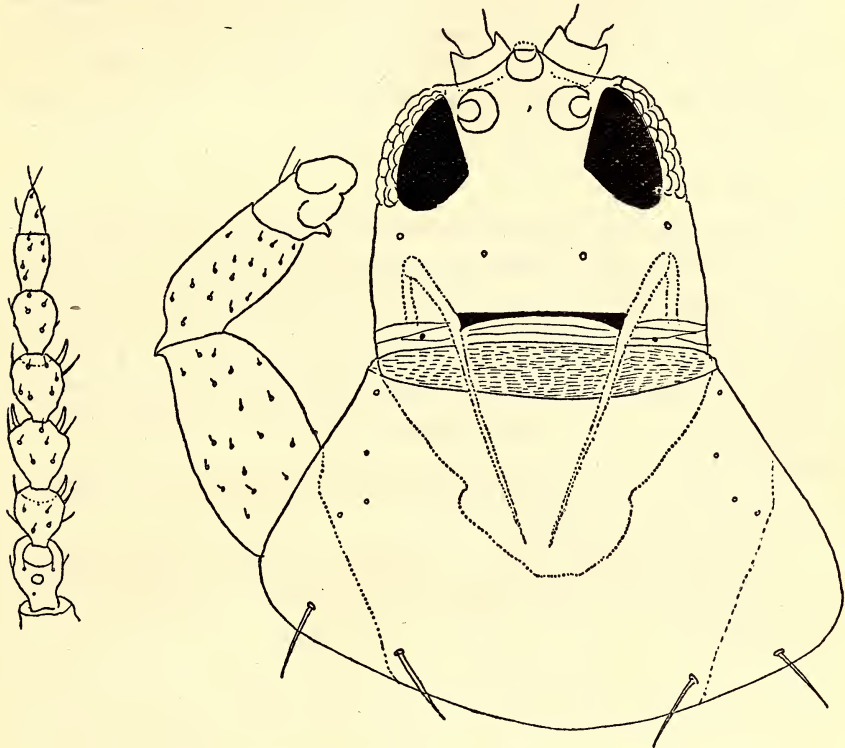
#### **Haplothrips (Chiraplothrips) priesneri** sp. n.

*Chiraplothrips*<sup>1</sup> Priesner is reported for the first time from India and this subgenus is quite distinct from other allied subgenera of *Haplothrips* by the 'short and stout legs, forefemora at the apex of the outer margin, with a small tooth-like projection; wings narrow, with double fringes; joint 4 of antenna with only 2 sense cones'.

<sup>1</sup>Priesner, 1931, *Bull. de la Soc. Roy. Ent. d'Egypte* : 271-272

*Macropterous female :*

Body brown, inclusive of antennal joints ; abdomen and foretibia pale brown, the latter with yellowish tinge. Wings clear. Little red pigment scattered all over.



*Haplothrips (Chiraplothrips) priesneri* sp. n.

Head and antenna of female

Head  $172 \mu$  long,  $154 \mu$  wide across eyes and  $168 \mu$  across cheeks. Eyes  $70 \mu$  long and  $49 \mu$  wide. Ocelli placed above the middle region of eyes ; disposition broadly triangular ; median ocellus  $16 \mu$  wide, placed  $29 \mu$  from posterior ocelli, also  $16 \mu$  wide, placed  $48 \mu$  apart. Maxillary bridge  $90 \mu$  long, the maxillae at their point of articulation with the basal piece,  $128 \mu$  apart. Antennal joints short and stout, individual joints measuring, length (width) in  $\mu$  :

29 (35) ; 48 (32) ; 38 (32) ; 45 (32) ; 43 (32) ; 43 (22) ; 38 (19) ; 32 (13).

Mouth cone  $126 \mu$  long, reaching about the middle of prosternum,  $168 \mu$  wide at base,  $70 \mu$  at tip, broadly rounded.

Prothorax  $196 \mu$  long at middle,  $210 \mu$  and  $322 \mu$  wide across anterior and posterior margins respectively. Forefemora moderately stout, with a small tooth-like projection at apex, on outer margin ; foretarsus with a small tooth.



Pterothorax, 350  $\mu$  long, 294  $\mu$  wide across mesothorax and 280  $\mu$  across metathorax. Forewings 1050  $\mu$  long, constricted at middle, with 7 accessory cilia. Basal wing spines short, disposed of in a broad triangle, 22, 22, and 19  $\mu$  long respectively.

Abdomen 294  $\mu$  wide at base and middle, gradually narrowing at apex. Abdominal segment VIII and IX, 266 and 140  $\mu$  wide respectively at base; outer and inner bristle of IX 420 and 462  $\mu$  long. Tube 126  $\mu$  long, 70  $\mu$  wide at base and 35  $\mu$  at tip; tube setae 112  $\mu$  long. Total body length 2.100 mm.

*Macropterous male:*

Coloration mostly as in the female, but with antennal joints 1 & 2 and 7 & 8 darker brown; body with plenty of red pigment. Antennal joints, as a rule, stouter than in the female, individual joints measuring, length (width) in  $\mu$ : 26 (28); 43 (32); 43 (32); 48 (32); 45 (26); 43 (26); 38 (22); 32 (16). Forefemora stouter than in female, 74  $\mu$  wide at middle; foretarsus with a stouter tooth. Total body length: 1.64 mm.

*Habitat:* Holotype ♀ and allotype ♂, on *Chloris barbata*, Madras, January 1959.

This species is named in honour of Dr. Priesner of Linz (Austria) who examined the material.

This species differs from *C. faureanus* Priesner in the uniformly brown antennal coloration, and in the presence of 7 duplicate cilia on the forewing.